



AGA Report No. 3

ORIFICE METERING OF NATURAL GAS AND OTHER RELATED HYDROCARBON FLUIDS

PART 4

Background, Development, Implementation Procedure, and Subroutine Documentation for Empirical Flange- Tapped Discharge Coefficient Equation

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FOREWORD

AGA Report No. 3, *Orifice Metering of Natural Gas and other Related Hydrocarbon Fluids*, consists of four parts. **This one is Part 4 – Background, Development, Implementation Procedure, and Subroutine Documentation for Empirical Flange-Tapped Discharge Coefficient Equation.** Other parts are:

Part 1 – *General Equations and Uncertainty Guidelines*

Part 2 – *Specification and Installation Requirements*

Part 3 – *Natural Gas Applications*

Each of the four parts is published separately to facilitate future changes, allow immediate use, and reduce the size of the applicable part needed by most users. Although for many applications each part can be used independently, users with natural gas applications are advised to obtain Parts 1, 2 and 3.

This report applies to fluids that, for all practical purposes, are considered to be clean, single phase, homogeneous, and Newtonian, and the Part 4 of the report describes the background and development of the equation for the coefficient of discharge of flange-tapped square-edged concentric orifice meters, and recommends a flow rate calculation procedure. The recommended procedures provide consistent computational results for the quantification of fluid flow under defined conditions, regardless of the point of origin or destination, or the units of measure required by governmental customs or statute. The procedures allow different users with different computer languages on different computing hardware to arrive at almost identical results using the same standardized input data.

This report has been developed through the cooperative efforts of many individuals from industry under the sponsorship of the American Gas Association, the American Petroleum Institute, and the Gas Processors Association, with contributions from the Chemical Manufacturers Association, the Canadian Gas Association, the European Community, Norway, Japan and others.

It may become necessary to make revisions to this document in the future. Whenever any revisions are advisable, recommendations should be forwarded to the Operations and Engineering Section, **American Gas Association**, 400 N. Capitol Street, NW, 4th Floor, Washington, DC 20001, U.S.A. A form has been included at the end of this report for that purpose.